

PROCEEDINGS OF LEARNED SOCIETIES.

LINNÆAN SOCIETY.

June 6, 1843.—Edward Forster, Esq., V.P., in the Chair.

Read a "Description of *Peltophyllum*, a new genus of Plants allied to *Triuris* of Miers, with remarks on their Affinities." By George Gardner, Esq., F.L.S. &c.

The plant described in the present communication was discovered by Mr. Gardner in the province of Goyaz, in the interior of Brazil, and the few specimens which he possesses are unfortunately all female. The following are its characters:—

PELTOPHYLLUM, Gardner.

Flores dioici. *Masc.* ignoti. *Fœm.* *Perigonium* 6-partitum, coloratum, patens, persistens; laciniis ovatis, longè acuminatis; acumine plano. *Ovaria* plurima, in tori apice sessilia, adpressa, libera. *Styli* ad apicem incrassati, obliquè truncati. *Fructus* ignotus.

Herba parvula Brasiliensis. *Folia a scapo distantia, longè petiolata, petiolata, valdè reticulata.* *Radix tuberosa, fibrosa.* *Scapus subramosus, basi squamosus;* pedunculis basi bracteatis, unifloris; floribus luteis.

Peltophyllum luteum, Gardn. Herb. Bras. n. 3570.

Mr. Gardner compares the female flowers of his plant with those of *Triuris*, to which it is evidently nearly related; and discusses at some length the subject of their proper position in the natural system, which he believes to be along with *Smilacæ* and the other orders of the group to which Prof. Lindley gave first the name of *Retosæ* and subsequently that of *Dictyogens*. He proposes to form a distinct order for their reception under the name of

TRIURACEÆ.

Herbæ parvulæ, perennes, rhizomate repente? Folia solitaria, a scapo distantia, longè petiolata, nervosa, integerrima. *Vaginæ* ad basin petiolorum membranacæ. *Scapus* subramosus, basi squamosus. *Flores* regulares, dioici; pedicellis unifloris, bracteatis. *Perigonium* corollinum, 3- vel 6-partitum, patens, persistens; laciniis longis, acuminatis, æstivatione basi valvatis; acumine interdum tubuloso, ante anthesin gyrate incluso. *Stamina* 3 vel 6? *Antheræ* extorsæ, loculis disjunctis, imo androphoro magno carnosio centrali insertæ. *Ovaria* plurima, in tori apice sessilia, adpressa, libera. *Ovula* in loculis solitaria? *Styli* sublaterales, subulati, vel ad apicem incrassati et obliquè truncati. *Fructus* ignotus.

A figure of *Peltophyllum luteum*, with details, from the pencil of Mr. Miers, accompanied the paper.

June 20.—E. Forster, Esq., V.P., in the Chair.

Read "Notes on the Forest-trees of Australia." By George Suttor, Esq., F.L.S. &c.

Mr. Suttor states that the far greater number of these trees belong to the order *Myrtacæ*, and chiefly to the genus *Eucalyptus*. The species are very numerous, and many of them are still undescribed. They are generically known to the colonists as Gum-trees, and their distinctive names are chiefly derived from the colour of their barks;

as for example, blue, black-budded, red, white, yellow, green, and spotted Gum-trees. There is also a Flooded Gum-tree, a Manna Gum-tree, and a so-called Mountain-ash, all belonging to the genus *Eucalyptus*. Many of the species are of gigantic growth, and the Black-budded Gum-tree in particular (*Eucalyptus globulus*, Labill. ?) attains a size equal perhaps to that of any tree in the world. It derives its name from the blackness of its butt, caused, it is said, by exposure to the fires which are so frequently kindled by the natives in order to burn the grass and secure the game.

The Manna Gum-tree (*Eucalyptus mannifera*) is also of large growth, with widely spreading branches. Its manna drops in a liquid state most plentifully in the summer from the flowers and buds of the young shoots into the leaves, where it quickly becomes hardened, and falls thence to the ground in irregular lumps. It has a sweet agreeable taste, and is said to have all the properties of the manna of the shops. The wood contains a large quantity of saccharine sap, which soon becomes acid, and it is to this cause that Mr. Suttor attributes the power of resisting fire, so remarkable in all the Gum-trees, and which renders them peculiarly valuable in building houses.

Another species of *Eucalyptus*, the so-called Mountain-ash, which grows in the Blue Mountains, is a very fine timber-tree, which splits freely into long pieces and is brought to Paramatta for chair-rafts, &c. Its wood is very strong and elastic, and said to be equal in those respects to any wood in the world.

The Forest-mahogany of the colonists (*Eucalyptus robusta*, Smith) has strong large spreading branches, forming a very large head, and sweet-scented flowers. Its wood is heavy and close-grained, resembles the mahogany of Jamaica, and is used in Sydney for making chairs and bedsteads.

The timber-trees not belonging to the order *Myrtaceæ* consist of a few species of *Coniferæ*, the *Casuarinæ*, and the so-called Cedar (*Cedrela Toona*, Roxb.), the wood of which very much resembles the Honduras mahogany, and is very valuable to the colonists in fitting up their houses, making furniture, &c. The tree is of large growth, and has not been found in the interior, but generally on the low grounds of the coast rivers.

December 5.—E. Forster, Esq., V.P., in the Chair.

Mr. Westwood, F.L.S., exhibited a box of *Œstrideous* insects recently received from Professors Zetterstedt and Dahlbom, with the view of determining the correctness of Mr. Bracy Clarke's conjecture as to certain characters, which, in his memoir published in the last Part of the 'Transactions' of this Society, he had regarded as sexual, and as proving that the *Œstrus Tarandi* and *Œ. Trompe* are sexes of the same species. Mr. Westwood stated that this collection contained both sexes of each of these species, and that it would consequently be necessary to reinstate these two species as well as several others, which, on the same account, Mr. B. Clarke had sunk in his memoir.

December 19.—E. Forster, Esq., V.P., in the Chair.

Read a paper "On *Carex saxatilis*, L., and an allied species." By Francis Boott, M.D., F.L.S. &c.

The allied species referred to was found in 1832 in Glen Phee, Clova, by the party accompanying Dr. Graham on his annual botanical excursion to the Highlands, and was considered as a form of *C. saxatilis*, L.; but Dr. Boott, whose attention has lately been called to the subject by a letter from Mr. W. Wilson of Warrington, pointing out certain differences between the two plants, is led to regard it as a distinct species, which he names and characterizes as follows:—

Carex Grahami, spicis 4—5 cylindricis ferrugineis; masculis 2 (rariùs 1) gracilibus acutis: fœmineis 2—3 subremotis crassis obtusis inferioribus pedunculatis evaginatiss subnutantibus, stigmatibus 2, perigyniis oblongo-ovatis rostratis bifurcatis inflatis nervosis suberectis ferrugineis (rariùs stramineis) basi pallidis squamâ ovatâ acutâ fuscâ apice albidâ nervo pallido duplò longioribus.

Of *Carex saxatilis*, L., Dr. Boott gives the following character:—

C. saxatilis, spicis 2—3 atropurpureis; masculâ 1 (rariùs 2) cylindricâ pedunculatâ: fœmineis 1—2 rotundatis ovatisve infimâ plus minusve pedunculatâ evaginatâ bracteata erectâ, stigmatibus 2—3, perigyniis subglobosis ovatisve rostratis emarginatis stipitatis patentibus enerviis atropurpureis basi pallidis squamâ ovatâ obtusiusculâ nigro-purpureâ apice albidâ nervo concolori longioribus.

C. saxatilis, L. *Fl. Lapp.* 259 (1737).

C. pulla, Good. in *Linn. Trans.* iii. t. 14 (1795).

Hab. in Alpiibus Scotiæ, Norvegiæ, Lapponiæ, Sueciæ, Islandiæ, Insularum Færoensium.

The author enters at length into a critical examination of the original authorities which prove the *Carex pulla* of Goodenough to be the same with *Carex saxatilis*, L.; and points out the origin of the confusion of the latter with *C. rigida*, Good. He then examines more particularly the distinguishing characters of *C. Grahami* and *C. saxatilis*; and adds that he should have no doubt of the specific distinction between them but for the observations of Drejer, who in his 'Revisio critica Caricum Borealium' describes, under the name of *C. pulla* β *fusca*, specimens from Iceland and Greenland closely agreeing with *C. Grahami*, except that he makes no mention of the nerves of the perigynium, and observes that the Greenland specimens are so extremely variable that it could scarcely be believed that they belong to the same species. In the absence of precise information respecting the perigynium of the larger Greenland specimens, Dr. Boott is inclined to refer them, together with the specimens from the Rocky Mountains described by him in Sir W. J. Hooker's 'Flora Boreali-Americana' under the name of *C. saxatilis*, to *C. physocarpa*, Presl, a native of Nootka Sound. Of the latter his knowledge is derived from M. Kunth's "*Cyperographia*."

In conclusion Dr. Boott leaves it to future observation to determine the value of the specific character which he has given of *C. Grahami*; whether it is to be considered as a distinct species, referred back to *C. saxatilis*, L., or transferred to *C. physocarpa*, Presl, re-

peating that at present he considers it, with Mr. Wilson, entitled to rank as a species.

Read also an "Account of the Trees producing Myrrh and Frankincense, as found in those parts of the coast of the Red Sea and Indian Ocean whence those Gums were obtained in the first dawn of Commerce." By Major W. C. Harris, late on an Embassy to the Court of Shoa in Southern Abyssinia. Communicated by the Secretary.

Major Harris describes the Myrrh-tree (*Balsamodendron Myrrha*) as growing abundantly on the Abyssinian coast of the Red Sea to the Straits of Bab el Mandeb, over all the barren hill-sides of the low zone inhabited by the Danakil or Adaiel tribes. It is called *Kurbeta*, and there exist two varieties; one producing the better description of the gum being a dwarf shrub, with deeply serrated crisp leaves of a dull green; while the other, which yields a substance more like balm than myrrh, attains a height of ten feet, and has bright, shining, slightly dentated leaves. The myrrh, called *Hofali*, flows freely from any wound, in the form of a milky juice, possessing a perceptible acidity, which either evaporates or becomes chemically changed during the formation of the gum. The seasons for collecting it are in January, when the buds appear after the first rain; and in March, when the seeds are ripe. Every passer-by transfers such portions of it as he may find to the hollow boss of his shield, and exchanges it for a handful of tobacco with the next slave-dealer whom he meets on the caravan-route. The merchants also of the sea-coast, before returning from Abyssinia, send into the forests that gird the western bank of the river Hawash, and bring away considerable quantities of the *Hofali*, which is sold at a high price. The natives administer it to their horses in cases of fatigue and exhaustion.

The shrub which produces the balm of Mecca, *Balsamodendron Opobalsamum*, is found on the opposite Arabian coast at Cape Aden, where it is called *Beshán*, either the original of or a derivative from the word *Balsam*. It is the *Balissan* of Bruce, who did not meet with the true myrrh-tree. The balm flows copiously from any incision, and the æthereal oil speedily evaporating, a tasteless gum remains.

The Frankincense, Major Harris states, is found chiefly along the Somauli coast, in the neighbourhood of Cape Guardafui. At Bunder Maryah, twenty miles to the S.W. of Ras Feeluk, the mountains are three miles from the shore and attain a height of five thousand feet. Ascending a thousand feet a plain presents itself, bounded on every side by precipitous mountains, studded with the Frankincense and Gum-Acacia trees, although looking bare from the total absence of under-wood. The frankincense-trees invariably grow from the bare and smooth sides of the white marble rocks, or from isolated blocks of the same scattered over the plain, without any soil whatever. From the base of the trunk, and about treble its diameter, a round thick substance is thrown out, of a nature between bark and wood, adhering most firmly to the stone, and resembling at a distance a mixture of mortar and lime. The stem rises from the centre of this mass, and having first taken a bend outwards of several inches, rises

straight to a height of forty feet. It throws out from the top short branches covered with a very bright green foliage, the leaves being narrow and rounded at the end, five or six inches in length by one broad, and crimped like the frill of a shirt, or rather like the sea-weed called by children on the English coast "the old gentleman's ruffles." The usual girth of the stem is from a foot to eighteen inches. The bark is perfectly smooth and consists of four distinct layers, the outermost of which is very thin; the two next of a singularly fine texture, resembling oiled letter-paper, perfectly transparent, of a beautiful amber-colour, and used by the Somaulis to write upon; and the innermost about an inch thick, of a dull reddish hue, tough and not unlike leather, but yielding a strong aromatic perfume. The wood is white and soft. On making a deep incision into the inner rind, the gum exudes profusely, of the colour and consistence of milk, but hardening into a mass by exposure to the air. The young trees produce the best and most valuable gum, the older merely yielding a clear glutinous fluid resembling Copal varnish and exhaling a strong resinous odour. During the S.W. monsoon the pastoral tribes in the neighbourhood of Ras Feeluk collect large quantities of frankincense, which they barter with the Indian Banyans, of whom a few reside at the villages along the Abyssinian coast. Boats from Maculla and from other parts of the Arabian coast also come across during the fine season and carry away the gums that have been accumulated, in exchange for a coarse kind of cotton cloth which is worn by the shepherds.

ZOOLOGICAL SOCIETY.

April 11, 1843.—William Yarrell, Esq., Vice-President, in the Chair.

Descriptions of ten new species of *Cancellaria*, from the collection of Sir Edward Belcher, by Mr. Hinds, were read.

CANCELLARIA VENTRICOSA. *Canc. testá ovatá, acuminatá, albescente; anfractibus septenis, ventricosis, subturbinatis, cancellatis, interstitiis quadratis; aperturá oblongá, prope mediam dilatatá; labio interno expanso; columellá triplicatá; umbilico mediocri.*
Axis 15 lin.

Hab. The west coast of America, between 12° 28' and 24° 38', north latitude; viz. Realejo, in from sixty to seventy fathoms; San Blas; Gulf of Magdalena, California, in seven fathoms, sandy mud.

Very similar in its characters to *C. candida*, but distinguished from it in the absence of the secondary impressed lines which cross and interfere with the cancellation. *C. candida* is described with only two columellar folds, which might be regarded as another source of difference, our shell having three very distinct. But I think it will be found on close examination that the former has a third incipient fold, which, though very small, truly exists.

CANCELLARIA URCEOLATA. *Canc. testá ovatá, acuminatá, lævigatá, epidermide fuscá indutá; anfractibus septenis, costatis, supernè subangulatis, ultimo subquadrato; costis parviusculis, rotundatis, lineis elevatis decussatis; aperturá oblongá in canalem recurvum effusum desinente; labro subrecto, intus sulcato; labio interno*

expanso ; *columellâ biplicatâ, sed plicâ tertiâ inferiore obsolete ; plicâ superiore in dente acuto desinente, sinu inferiore magno ; umbilico parvo*. Axis 16 lin.

Hab. The west coast of America, between $12^{\circ} 2'$ and $21^{\circ} 32'$ north latitude ; viz. Gulf of Papagayo, in from eight to fourteen fathoms ; San Blas, in seven fathoms.

The elevations which cross this shell are remarkably disposed. If the finger-nail is driven over the shell, from the base towards the apex, it meets with no resistance, but if in the contrary direction it is obstructed at every elevation. The squareness of the last whorl and the straight outer lip have a mutual relation, since they are dependent on each other ; and these characters, taken collectively, will be of value in making a diagnosis between nearly allied species.

CANCELLARIA ALBIDA. *Canc. testâ oblongâ, subattenuatâ, cancellatâ, albescente ; anfractibus septenis, interstitiis transversis vel subquadratis ; aperturâ oblongâ ; labro acuto, intus sulcato ; columellâ biplicatâ, plicâ tertiâ inferiore obsolete ; umbilico minimo, suboculto ; canali mediocri, contorto*. Axis 13 lin.

Hab. The west coast of America, between $2^{\circ} 47'$ south, and $9^{\circ} 55'$ north latitude ; viz. Bay of Guayaquil, Panama, and Veragua, in from seven to twenty-three fathoms.

CANCELLARIA CREMATA. *Canc. testâ oblongâ, subattenuatâ, fuscâ, lucidâ ; anfractibus quinis, cancellatis, interstitiis magnis, transversis vel subquadratis ; aperturâ oblongâ, supernè plicâ unicâ ; labro intus sulcis subdistantibus, labio interno expanso ; columellâ triplicatâ ; umbilico mediocri ; canali breviusculo*. Axis 10 lin.

Hab. Bay of Panama ; from a muddy bed in from four to ten fathoms.

The figures in the 'Conchological Illustrations,' *Cancellaria* 9 and 10, appear to me to represent two distinct species, both of which were collected in the Sulphur. Fig. 10 corresponds more closely with the description of *C. indentata*, and to this I would limit the species. The opinion which I had formed from the specimens in my own possession, became fully confirmed in the examination of those in Mr. Cuming's collection, and a fine shell belonging to him enables me to enrich the description. It may be desirable to remark that M. Kiener has copied both figures, and assigns them to one species.

CANCELLARIA CORRUGATA. *Canc. testâ bucciniformi, fuscâ ; anfractibus quaternis, subventricosis, rugis parvis longitudinalibus confertis indutis, lineis impressis decussatis ; aperturâ oblongâ, fuscâ ; labro intus sulcato ; columellâ plicis duabus albidis instructâ ; umbilico nullo ; canali mediocri*. Axis 8 lin.

Hab. Bay of Guayaquil. From seven fathoms ; mud.

CANCELLARIA ELATA. *Canc. testâ ovatâ, elongatâ, acuminatâ ; anfractibus septenis costatis, supernè angulatis, lineis elevatis decussatis ; suturâ profundâ ; aperturâ ovali ; peritremate supernè disjuncto ; labro intus sulcato ; columellâ triplicatâ, plicâ inferiore maximâ ; umbilico parvo, suboculto ; canali inflexo*. Axis 9 lin.

Hab. A single specimen was obtained at Panama, from thirty fathoms.

This shell will always be readily distinguished by its elongated form, shouldered ribs, and by the remarkable circumstance of the plaits on the columella being reversed in size, the inferior being the largest.

CANCELLARIA FUNICULATA. *Canc. testá ovatá, elongatá; anfractibus senis, costatis, supernè subangulatis; costis subdistantibus elevatis, rotundatis, nodulosis, lineis elevatis decussatis; suturá profundá; labro intùs sulcato; columellá plicis tribus parvis; umbilico marginato; canali subnullo.* Axis 8 lin.

Hab. A single specimen only was obtained by the dredge from seven fathoms, sandy mud, in the Gulf of Magdalena, California.

CANCELLARIA BICOLOR. *Canc. testá retusá, contabulatá, fusconigricante; anfractibus septenis, angulatis, procul costatis; costis acutis, lineis elevatis distantibus decussatis; aperturá trigoná, supernè callositate albá; labro reflexo, intùs sulcato; columellá triplicatá; umbilico magno.* Axis 11 lin.

Hab. Straits of Macassar; from ten fathoms, coarse sand. Mr. Cuming obtained specimens at the Island of Corregidor, Bay of Manila, from seven fathoms, also in coarse sand. A banded variety was obtained in the same locality.

A nearly allied species is the American shell, *C. rigida* of Sowerby; but the present is a larger shell, with sharper distant ribs, crossed at regular distances by slightly elevated lines, and the peritreme is not crenulate. The ribs of *C. rigida* are nodulous from the crossing lines, which are also disposed to rugosity throughout. In *C. bicolor* the lines are particularly regular and uniform in their characters. This is one of several species which were obtained both in the Sulphur and by Mr. Cuming in the Asiatic seas. It is worthy of remark, that the specimens from the seas about the Philippines are uncommonly fine, and the use of them permits me to complete my descriptions more fully, and to note with more accuracy their geographical diffusion.

CANCELLARIA LAMELLOSA. *Canc. testá ovatá, acuminatá, pallidá, contabulatá; anfractibus senis, ventricosis, lamellis numerosis confertis, crenatis, in loco costarum instructis; aperturá trigoná; labro incrassato, reflexo; columellá plicis tribus parvis; umbilico magno; canali subnullo.* Axis $7\frac{1}{2}$ lin.

Hab. This species has an extensive habitat, being found in several places in the Indian Archipelago and at the Cape of Good Hope. At the latter a single specimen was obtained on the Lagulhas Bank in seventy fathoms; also at Ceylon and in the Straits of Macassar. Mr. Cuming also procured specimens in seven fathoms, coarse sand, at the Island of Corregidor, in the Bay of Manila.

Corresponding to the customary situation of the ribs, this species throws off series of lamellæ, two or more in number, which present a sharp, reflected, crenated margin. These are clustered together in very irregular numbers, sometimes there being only two, or perhaps even one; but as the shell advances in age they are usually crowded

together in some numbers, and this remarkable and elegant character will readily distinguish it from any other species.

CANCELLARIA ANTIQUATA. *Canc. testá ovald, acuminatá, contabulatá, albidd; anfractibus septenis, planulatis, costatis, transversè striatis; costis acutis, supernè spinis cavis desinentibus; aperturá trigoná; labro reflexo; columellá plicis tribus minimis; umbilico maximo.* Axis 7 lin.

Hab. New Guinea; in twenty-two fathoms, coarse sand. Also obtained by Mr. Cuming at the island of Corregidor, Bay of Manila, in seven fathoms, coarse sand.

A species nearly allied to the singular *C. trigonostoma*, having a similar relative situation of the whorls to each other, and a very large umbilicus. This is a smaller shell, with a shorter spire, and sutures less profound.

A letter from Mr. J. E. Gray, addressed to the Curator, was read. This letter refers to some species of Bats from Jamaica, which Dr. Richard Parnell had sent to Mr. Gray. Among these, Mr. Gray observes, are some specimens of the genus *Macrotis*, a genus which he had recently established upon a Bat from Hayti, showing that this form is likewise extended to Jamaica.

“The collection also contains a specimen of *Arctibeus Jamaicensis*, Leach, and some specimens of a new genus, which is very interesting, as being a Noctilionine Bat, with an apparent nose-leaf, bearing a much greater resemblance to the Leaf-nosed Bats (*Phyllostomina*) than even *Mormoops*, which, when he first described it, Dr. Leach referred to that group. Indeed at first sight I was inclined to regard the new bat as belonging to the Leaf-nosed Bats; but on examination I found that the nostrils, instead of being placed on the leaf-like process, which is the character of that group, were on the under side of the nose-keel, and quite separate from it.

“This genus may for this reason be called *Phyllodia*, and it is thus characterized:—

“Head moderate; nose rather produced, with a sharp-edged transverse keel, with the nostrils on the lower side of the keel, and an ovate, lanceolate, fleshy process on the middle of the upper surface; chin with a single, transverse, membranaceous fold, surrounding a triangular group of many small warts; ears lateral; tragus distinct; wings long, rather narrow; thumb moderate, lower joint rather shortest; wing from the upper part of the ankle; interfemoral membrane large, truncated; heel-bone long, strong; tail enclosed, half as long as the membrane, with the tip above it, and with a vessel from each side of its tip to the hinder margin of the membrane.

“These characters show that this genus has much resemblance with *Mormoops*, and especially *Chilonycteris*, but it differs from the former in having no transverse membranaceous fold on the face, and from the latter, with which it agrees in having a membranaceous fold across the chin, in having a fleshy, erect, leaf-like expansion on the upper surface of the nose, which is wanting in that genus.”

Mr. Gray proposes to name this species after Dr. R. Parnell, so well known for his works on the fishes and grasses of Scotland.

PHYLLODIA PARNELLII. *Phyll. auribus magnis, subacutis; vellere cinerascenti-fusco, pilis ad apicem obscurioribus.*

The following note on the Spermatozoa of the Camel (*Camelus Bactrianus*, Linn.), by Mr. Gulliver, was then read:—

“In my observations on the Semen and Seminal Tubes of Mammalia and Birds, published in the Proceedings of the Society, July 26, 1842, I have noticed the form of the spermatozoa of the Dromedary. As I am not aware that the seminal animalcules of the Camel and Dromedary have yet been described, I now exhibit drawings of them to the Society.

“Although the blood-corpuscles of the *Camelidæ* have the same form as the blood-corpuscles of oviparous vertebrate animals, it will be observed that the Camel, like the Dromedary, has spermatozoa of the same type as the spermatozoa of other Mammalia, several of which are figured in Professor Wagner’s excellent ‘Elements of Physiology,’ translated by Dr. Willis, part i. page 11.”

Various specimens presented to the Society since the previous Meeting were laid on the table; they consisted of a very valuable collection of insects from the interior of South Africa, presented by the President, the Earl of Derby; a specimen of a Manis from China, presented by the Honourable Sir Alexander Johnstone; and a series of Insects, Birds’ Eggs, &c., collected at Samsoon and Erzeroom by the Society’s Corresponding Members, E. D. Dickson, Esq., and H. J. Ross, Esq. This last-mentioned collection also contained a specimen of the European Green Woodpecker (*Picus viridis* of authors), and of the Common Pheasant (*Phasianus colchicus*, Linn.).

Mr. Fraser exhibited a specimen of a Pouched Rat (*Cricetomys Gambianus*) and various species of Birds which he had procured on the western coast of Africa during the Niger expedition, and read the following notes relating to them:—

Cricetomys Gambianus, Wat. Lives in holes in the ground, more abundantly under the storehouses, where of a night they may be heard squeaking and fighting, similar to our common Rat (*Mus decumanus*, Linn.); they climb the paw-paw trees and feed on the fruit as it hangs: the cheek-pouches contained paw-paw seeds. Caught in iron gins baited with boiled yam. The natives set great store on this animal, its flesh being considered the greatest delicacy that can be offered at a wedding-feast.

Hab. Clarence, Fernando Po. Common.

Neophron niger, Less., *Cathartes monachus*, Temm. Pl. Col. 222.

Common in the neighbourhood of Cape Coast Castle, living in the smaller trees near the houses.

Hirundo leucosoma, Swains. Jard. Nat. Lib. vol. (Orn.) viii.; B. of W. Africa, page 74, 1837.

Hab. Accra. Very common.

Ispida bicincta, Swains. Jard. Nat. Lib. vol. (Orn.) viii.; B. of W. Ann. & Mag. N. Hist. Vol. xiii.

Africa. Common : seen in flocks of six or eight, making a continual chattering noise as they fly ; this species dives into the salt as well as fresh water, sometimes from the height perhaps of twenty feet ; I have seen them hover over their scaly prey like a kestrel.

Hab. Fernando Po and river Niger, as far up as Iddah.

Macronyx flavigaster, Swains. Jard. Nat. Lib. vol. (Orn.) vii. ; B. of W. Africa, p. 215, 1837.

Hab. Accra.

Ploceus textor, Cuv.

Hab. Cape Palmas, Cape Coast and Fernando Po.

At each of the above places I found this bird extremely common ; they commit much mischief in the rice and Indian-corn plantations. As many as fifty pairs may be seen building their domed nests in one tree, and in the neighbourhood of houses : they lay from four to five mottled eggs, varying as much in size, colour and markings as do our common Sparrow (*Pyrgita domestica*, Cuv.) ; they are extremely active and noisy, continuing fighting and chattering from daybreak to sundown : the nest is composed of coarse grass interwoven, sometimes fixed in a forked branch of a tree and at other times suspended.

Ploceus brachypterus, Swains. Jard. Nat. Lib. vol. (Orn.) vii. ; B. of W. Africa, p. 168. pl. 10, 1837.

Hab. Fernando Po.

Found in company with *P. textor*, living in the gardens round Clarence. Irides white.

Ploceus personatus, Vieill. Gal. des Ois. pl. 84.

Hab. Cape Coast.

Euplectes oryx, Swains., *Loxia oryx*, Vieill.

Hab. Cape Coast. Common : frequents the Indian-corn plantations.

Vidua chrysonota, Swains. Jard. Nat. Lib. vol. (Orn.) vii. ; B. of W. Africa, p. 178, 1837.

Hab. Cape Palmas.

Vidua erythrorhynchus, Swains. Jard. Nat. Lib. vol. (Orn.) vii. ; B. of W. Africa, p. 176. pl. 12, 1837.

Hab. Cape Palmas. Common.

Passer simplex, *Pyrgita simplex*, Swains. Jard. Nat. Lib. vol. (Orn.) vii. ; B. of W. Africa, p. 208, 1837.

Hab. Cape Coast and Accra.

Passer Jagoensis, Gould. Voy. of Beag. (Birds) p. 95. pl. 31.

Pyrgita Jagoensis, Gould, Proc. Zool. Soc. 1837, p. 77.

Hab. St. Vincent's and St. Antonio, Cape Verde Islands (June).

Lamprotornis chrysonotis, Swains. Jard. Nat. Lib. vol. (Orn.) vii. ; p. 143. pl. 6, 1837.

Hab. Fernando Po.

Very shy : irides white, bill and legs black, nostrils large and open. Caws somewhat like a crow ; makes a burring noise like a parrot when beginning to fly ; lives in the loftiest trees. The gizzard contained small seeds and red berries. The sexes do not differ.

Cuculus rubiculus, Swains. Jard. Nat. Lib. vol. (Orn.) viii. ; B. of W. Africa, p. 181, 1837.

Hab. Fernando Po.

Very shy : irides red hazel, cere and legs bright yellow, base of both mandibles yellow, mouth red.

Zanclostomus flavirostris, Swains. Jard. Nat. Lib. vol. (Orn.) viii. ; B. of W. Africa, p. 183. pl. 19, 1837.

Hab. Fernando Po (June).

Somewhat like a magpie, jerking and bobbing its tail and making a carr-r-r-r-ring noise as it hops from branch to branch ; also a fast runner. A *mantis* found in the gizzard. Irides red, bill yellow, legs nearly black, cere turquoise colour. The sexes do not differ.

Centropus Senegalensis, Ill., Swains. Jard. Nat. Lib. vol. (Orn.) viii. ; B. of W. Africa, p. 185. pl. 20, 1837.

Hab. Cape Palmas and Accra.

Found on or near the ground.

Peristera tympanistera, Temm.

Hab. Fernando Po (June).

A female was killed on the nest, which was composed of small roots, and contained two white eggs ; the nest was placed on the broken part of a small tree, about three feet from the ground. Irides hazel, bill and feet reddish plum-colour.

Chatopus Adansonii, Swains. Jard. Nat. Lib. vol. (Orn.) viii. ; B. of W. Africa, p. 217, 1837.

Hab. Central Africa.

This specimen was shot nearly opposite Iddah, about two hundred miles up the river Niger (August).

Glareola torquata, Temm.

Hab. Accra.

Rhynchops Orientalis, Rüppell, Atl. Zool. pl. 24.

Hab. Mouth of the river Nùn (August).

Mr. Fraser also called attention to two specimens of a species of *Manis*, which he laid before the Meeting. These, he observed, agreed in their characters with the species described by Mr. Gray in a communication read at the Meeting for February 28th of the present year, under the name *Manis multiscutata*. They were procured by Mr. Fraser at Fernando Po, and upon his return to England he had, upon comparing the specimens on the table with others of the *Manis tetradactyla*, perceived those differences upon which Mr. Gray founds the *M. multiscutata*. The animals, judging from their bones, were evidently not adult ; the largest measured thirty inches in length, of which the head and body were twelve inches, and the tail eighteen inches. He had kept them alive for about a week at Fernando Po, and allowed them the range of a room, where they fed upon a small black ant, which is very abundant and troublesome in the houses and elsewhere. Even when first procured they displayed little or no fear, but continued to climb about the room without noticing his occasional entrance. They would climb up the somewhat roughly-

hewn square posts which supported the building with great facility, and upon reaching the ceiling would return head-foremost; sometimes they would roll themselves up into a ball and throw themselves down, and apparently without experiencing any inconvenience from the fall, which was in a measure broken upon reaching the ground by the semi-yielding scales, which were thrown into an erect position by the curve of the body of the animal. In climbing, the tail, with its strongly pointed scales beneath, was used to assist the feet; and the grasp of the hind feet, assisted by the tail, was so powerful, that the animal would throw the body back (when on the post) in a horizontal position and sway itself to and fro, apparently taking pleasure in this kind of exercise. It always slept with the body rolled up; and when in this position in a corner of the building, owing to the position and strength of the scales and the power of the limbs combined, Mr. Fraser found it impossible to remove the animal against its will, the points of the scales being inserted into every little notch and hollow of the surrounding objects. The eyes are black and very prominent. The colonial name for this species of *Manis* is Attadillo, and it is called by the Booby, 'Gahlah.'

May 9.—William Yarrell, Esq., Vice-President, in the Chair.

Mr. Hinds proceeded with his descriptions of new species of Shells collected during the voyage of Sir Edward Belcher, C.B., and by H. Cuming, Esq., in his late visit to the Philippine Islands: those characterized in the paper read were laid on the table.

Genus CORBULA, Bruguière.

CORBULA CRASSA. *Corb. testâ solidâ, incrassatâ, elevatâ, albidâ, inæquilaterali, latere antico paululùm superante, longitudinaliter sulcatâ, anticè rotundatâ, posticè ad extremitatem truncatâ, ab umbone ad marginem posticam biangulatâ; valvarum margine ventrali inçlausâ, gibbosissimâ, sinistra posticè denticulatâ; umbonibus obliquis, posticis; intùs fuscâ.* Long. 11; lat. 7; alt. 7 lin.

Hab. Straits of Macassar; Straits of Malacca; Sabonga, island of Zebu; Bais, island of Negros, Philippines. Obtained in from seven to thirty fathoms, on a floor of coarse sand or gravel.

Cab. Belcher et Cuming.

Remarkable for the preponderance of the bulk of the anterior half over the posterior, a circumstance which also occurs in *C. bicarinata*. This, however, depends in some measure on the age, and is thus most conspicuous in those specimens which may be considered as beyond adult age.

CORBULA TUNICATA. *Corb. testâ ovato-trigonâ, obliquâ, anticè rotundatâ, posticè nasutâ, excavatâ, ab umbonibus angulatâ; valvis inæqualibus, dextrâ præcipuè maximâ, valdè sulcatâ, epidermide tenui corned indutâ, sinistra prope umbonem sulcatâ, aliter epidermide densâ indutâ; umbonibus obliquis posticis; intùs fuscâ.* Long. 12; lat. 7; alt. 9 lin.

Hab. Island of Corregidor, Bay of Manila; in seven fathoms, coarse

sand. Straits of Macassar; Lagulhas Bank, Cape of Good Hope: from seventy fathoms, on a gravelly bottom.

Cab. Belcher et Cuming.

CORBULA CUNEATA. *Corb. testá ovato-trigóná, æquilaterali, solidá, complanatá, sulcatá, anticè rotundatá, posticè angulatá; valvis subæqualibus, marginibus ventralibus gibbosis inclausis; umbonibus rectis; intùs purpurascete.* Long. 7; lat. 3; alt. 5 lin.

Hab. Catbalonga, Philippine Islands; from ten fathoms, soft mud. Lagulhas Bank, Cape of Good Hope; from seventy fathoms.

Cab. Belcher et Cuming.

CORBULA PALLIDA. *Corb. testá ovatá, tenui, elevatiusculá, sulcatá, anticè rotundatá, posticè ab umbonibus ad marginem posticam angulatá, valvæ dextræ margine ventrali acutá, inflexá; umbonibus lævigatis, rectis; intùs prope cardinem rosed.* Long. $7\frac{1}{2}$; lat. 3; alt. 5 lin.

Hab. —?

Cab. Cuming.

CORBULA SIMILIS. *Corb. testá ovatá, solidá, sulcatá, anticè elevatiusculá, rotundatá, posticè ad marginem posticam obliquè truncatá, ab umbonibus angulatá; valvis inæqualibus, dextrá margine ventrali subacutá, productá; umbonibus subobliquis; intùs rosed, dente valvæ sinistræ bifido.* Long. 6; lat. 8; alt. 4 lin.

Hab. Island of Corregidor, Bay of Manila; in seven fathoms, coarse sand.

Cab. Cuming.

CORBULA SCAPHOIDES. *Corb. testá oblongá, ordinatè sulcatá, interstitiis lævissimè striatis, anticè rotundatá, posticè elongatá, ad extremitatem obliquè truncatá, ab umbonibus subcarinatá; valvæ dextræ margine ventrali acutá, productá; umbonibus rectis.* Long. 6; lat. $2\frac{1}{2}$; alt. $3\frac{1}{2}$ lin.

Hab. Singapore; from seven fathoms, sandy mud. Bais, island of Negros, Philippines.

Cab. Cuming.

CORBULA FRAGILIS. *Corb. testá ovatá, tenui, albidá, striatá, striis transversis minutissimè reticulatá, anticè subproductá, rotundatá, posticè elongatá, ab umbonibus subrotundatá; valvæ dextræ margine ventrali acutá, productá; umbonibus rectis, lævigatis, æqualibus.* Long. 7; lat. 3; alt. 4 lin.

Hab. West coast of Veragua; from eighteen fathoms, mud.

Cab. Belcher.

CORBULA ALBUGINOSA. *Corb. testá retuso-ovatá, tenui, anticè rotundatá, posticè subelongatá, rotundatá; valvis valdè disparibus, dextrá longitrorsum striatá, pallidá, margine ventrali productá, acutá, sinistrá lævigatá, lineis elevatis radiantibus, epidermide fuscá indutá; umbonibus albidis, nitidis, inæqualibus.* Long. $4\frac{1}{2}$; lat. 2; alt. $3\frac{1}{2}$ lin.

Hab. New Guinea; Straits of Macassar: from seven to twenty-two fathoms, mud and coarse sand.

Cab. Belcher.

CORBULA ROTALIS. *Corb. testá oblongá, cornéá, anticè rotundatá, posticè subnasutá; valvis valdè disparibus, dextrá præcipuè maximá, rotundatá, sulcatá, margine ventrali productá, acutá, sinistrá parvâ, lineis decenis elevatis radiantibus; umbonibus valdè inæqualibus, subobliquis, anticis.* Long. $2\frac{1}{2}$; lat. $1\frac{1}{2}$; alt. $1\frac{1}{2}$ lin.

Hab. Calapan, Mindora, Philippine Islands; from fifteen fathoms, coarse sand.

Cab. Cuming.

Several species of *Corbula* are provided with elevated lines radiating from the umbo of the left valve towards the ventral margin, but none have them in such numbers, or so distinctly marked, as in the present small species. Here they are about ten in number, and with the great disparity of the valves, will readily distinguish the species.

CORBULA POLITA. *Corb. testá oblongá, ventricosá, tenui, albidá, obsoletè sulcatá, anticè rotundatá, posticè ab umbonibus subangulatá; valvis ferè æqualibus, dextræ margine ventrali acutá, subproductá; umbonibus æqualibus, lævigatis, rectis.* Long. $3\frac{1}{2}$; lat. 2; alt. $2\frac{1}{2}$ lin.

Hab. Sorsogon, province of Albay, Luzon, Philippine Islands.

Cab. Cuming.

CORBULA QUADRATA. *Corb. testá quadratá, albidá, tenui, lævigatá, anticè rotundato-truncatá, posticè rotundato-angulatá, abbreviatá; valvarum marginibus ventralibus tenuibus; umbonibus obliquis, anticis; dentibus parvis, gracilibus.* Long. 6; lat. ; alt. 5 lin.

Hab. —?

Cab. Metcalfe.

CORBULA OBESA. *Corb. testá ovatá, tenui, ventricosá, pallidá, striatá, anticè rotundatá, posticè ad extremitatem truncatá, ab umbonibus acutè angulatá; valvarum marginibus ventralibus inclausis, gibbosis; umbonibus rectis, lævigatis.* Long. 3; lat. 2; alt. 2 lin.

Hab. The west coast of America, between $8^{\circ} 57'$ and $21^{\circ} 32'$ north latitude, in from twenty-two to thirty-three fathoms, mud; namely, Panama, coast of Veragua, and San Blas.

Cab. Belcher.

CORBULA SPECIOSA. *Corb. testá ovato-trigoná, anticè rotundatá, posticè excavatè angulatá, albidá, sanguineá, densè multiradiatá; valvis valdè inæqualibus, marginibus ventralibus inclausis, dextrá rotundatá, sulcatá, sinistrá subplanulatá, striatá; umbonibus rectis, subplanulatis; intùs albidá.* Long. 9; lat. 5; alt. 7 lin.

C. radiata, Sowerby, Proc. Zool. Society, p. 36, 1833.

Hab. Panama; from six fathoms, mud. Gulf of Nicoya, Central America.

Cab. Belcher et Cuming.

This shell has been described as *C. radiata*, Sow., a name previously assigned by M. Deshayes to a fossil species. The description also was drawn up from such an indifferent shell, that it was almost by accident I discovered it was to apply to my specimens. I have therefore been under the necessity of recording a new description.

CORBULA MODESTA. *Corb. testá ovato-trigoná, complanatá, pal-*

lidd, radiatá, profundè sulcatá, anticè rotundatá, posticè ad extremitatem truncatá, ab umbonibus angulatá; valvarum marginibus ventralibus inclausis; umbonibus parvis, subæqualibus, roseis; intùs roseá. Long. 7; lat. $3\frac{1}{2}$; alt. 5 lin.

Hab. Straits of Macassar; from seven fathoms, coarse sand. Ticao, Philippine Islands; from eight fathoms, sandy mud. The Macassar specimens are of a dwarf size.

Cab. Belcher et Cuming.

CORBULA SOLIDULA. Corb. testá parvá, ovatá, subtrigond, solidulá, elevatiusculá, æquilaterali, sulcatá; anticè rotundatá, posticè unguulatá; valvarum marginibus ventralibus inclausis, gibbosis; umbonibus rectis, lævigatis. Long. 2; lat. 1; alt. $1\frac{1}{3}$ lin.

Hab. Straits of Macassar; from seven fathoms, coarse sand. Bais, island of Negros, Philippines.

Cab. Belcher et Cuming.

CORBULA MARMORATA. Corb. testá parvá, oblongá, solidulá, lævigatá, marmoratá, anticè rotundatá, posticè subangulatá; valvarum marginibus ventralibus inclausis; umbonibus obliquis, anticis; ante umbones sanguineo maculatá. Long. 2; lat. 1; alt. $1\frac{1}{3}$ lin.

Hab. West coast of Veragua; from twenty-six fathoms, mud.

Cab. Belcher.

CORBULA EBURNEA. Corb. testá parvá, ovatá, subtrigond, eburned, solidulá, complanatá, lævigatá, obsolete sulcatá; margine ventrali gibbosá; umbonibus parvis, subrectis, nitidis; intùs corned. Long. 2; lat. 1; alt. $1\frac{1}{3}$ lin.

Hab. North coast of New Guinea; Camaguing and Bohul, Philippine Islands: from seven to sixty fathoms, coarse sand and mud.

Cab. Belcher et Cuming.

This shell closely approaches *C. solidula*, but is distinguished by its somewhat more triangular shape, polished, ivory-like, flattened valves, and the slightly sulcate sculpture.

CORBULA MONILIS. Corb. testá minutá, globosá, pallidá, striulatá; valvis valde inæqualibus, dextrá multò maximá, posticè elongatá, margine ventrali acutá, productá; umbonibus rectis, lævigatis. Long. 1; lat. $\frac{2}{3}$; alt. $\frac{2}{3}$ lin.

Hab. Sual, Luzon, Philippine Islands; from five to seven fathoms, sandy mud.

Cab. Cuming.

A small globose species remarkable for the inequality of the valves, the left being sunk into the right. The latter valve is also distinguished by the posterior nasute elongation.

CORBULA FASCIATA. Corb. testá ovatá, subtrigond, lævigatá, pallidá, atro-fusco trifasciatá, anticè productá, rotundatá, posticè elongatá, ab umbonibus arcuatè angulatá; valvarum marginibus ventralibus acutis, convexis, dextræ productá; umbonibus rectis, suberosis. Long. $6\frac{1}{2}$; lat. $2\frac{1}{2}$; alt. 4 lin.

Var. Testá pallidá, posticè subproductiori.

Hab. St. Juan, province of Illocos, and Agoos, province of Pangasinan, Luzon, Philippine Islands.

Cab. Cuming.

CORBULA TRIGONA. *Corb. testá trigoná, lævigatá, pallidá, fuscá, vel obsolete unifasciatá, anticè rotundatá, posticè abbreviatá, ab umbonibus angulatá; valvæ dextræ margine ventrali acutá, productá; umbonibus rectis.* Long. $4\frac{1}{2}$; lat. 2; alt. 4 lin.

Hab. Senegal. Cab. Cuming et Metcalfe.

CORBULA LÆVIS. *Corb. testá ovali, æquilaterali, pallidá, tenui, lævigatá, complanatá; valvæ dextræ margine ventrali acutá, productá; umbonibus rectis, suberosis.* Long. 6; lat. $2\frac{1}{2}$; alt. 4 lin.

Hab. Hong-Kong, China. Cab. Belcher et Cuming.

Both valves are flattened towards their ventral margins in a very characteristic manner.

CORBULA FABA. *Corb. testá ovali, subæquilaterali, elevatiusculá, tenui, lævigatá, pallidè fusco trifasciatá, posticè ab umbonibus angulatá; valvæ dextræ margine ventrali acutá, productá; umbonibus rectis, fragmentis epidermide tenui indutá.* Long. 5; lat. $1\frac{2}{3}$; alt. $2\frac{2}{3}$ lin.

Hab. St. Miguel, east coast of Luzon, Philippine Islands. Obtained in the mud at low water.

Cab. Cuming.

It is very probable that the four species last described affect situations where the water is brackish rather than salt; and though they retain the hinge of *Corbula*, in general character they materially differ from the more typical forms of the genus.

POTAMOMYA, J. Sowerby.

POTAMOMYA NIMBOSA. *Pot. testá ovato-trigoná, lævigatá, anticè rotundatá, posticè productá, angulatá; valvis inæqualibus, margine ventrali acutá; umbonibus subæqualibus; epidermide tenui, tenebrosá, indutá, lineis capillaribus radiantibus; intùs albidá.* Long. 17; lat. 8; alt. 11 lin.

Sowerby's Conch. Manual, f. 498, 499.

Hab. The tributary streams of the Rio de la Plata, in the mud.

Cab. Cuming.

POTAMOMYA OCREATA. *Pot. testá valdè inæquilaterali, anticè abbreviatá, rotundatá, posticè productá, subnasutá, ab umbone ad marginem posticam angulatá; valvâ dextrâ rotundatá, margine ventrali anticè productá, acutá; epidermide fuscá indutá; intùs albidá vel cærulescente.* Long. 13; lat. 6; alt. 8 lin.

Hab. Brazil. From freshwater streams.

Cab. Cuming et Metcalfe.

The younger specimens are much less inequilateral than the old.

ENTOMOLOGICAL SOCIETY.

At the Anniversary Meeting held on the 22nd of January, Mr. G. Newport, the President, delivered an Address on the state and progress of Entomology, from which the following interesting observations are extracted:—

There is little need that I should dwell on the importance of a

knowledge of the habits of insects to the agriculturist, the horticulturist, and all who are directly engaged in the cultivation of the soil, in reference to the first great requisite of life, the production of food. The value of Entomology, in this respect, is already generally acknowledged; but there are other departments of science in which its value is yet unknown, or only just beginning to be appreciated; and yet even in these it may hereafter prove highly important.

The great object of all scientific research is the welfare and improvement of mankind. All inquiries that tend to this object, however remotely connected with it, deserve the attention of the philosopher and the philanthropist. Observations on the habits and economy of insects, independently of their immediate connexion with the cultivation of the soil, are of high importance with reference to our arts and manufactures; and are valuable, not merely to individual enterprise, but to the commerce of the whole world. The dye, the wax, the silk contribute to the riches and comfort of thousands, and even supply means of existence to tens of thousands; yet the value and most successful cultivation of these can only be improved by attention to the habits of the diminutive creatures by which they are produced. In like manner, attention to the habits, and experiments on the functions of these "miniatures of creation," become of immense importance when the knowledge of the entomologist is combined, on the one hand, with the skill of the analytic chemist, in watching the processes, or in testing the products of their little vital laboratories; or, on the other hand, is employed in assisting to guide the diminutive scalpel, or the eye of the comparative anatomist and physiologist, in his microscopic investigations of structure or function. Entomological knowledge, unapplied and alone, like many other pursuits, may perhaps be of little absolute value; but when combined with that of the chemist, the physiologist or the anatomist, it leads to a result of the highest possible importance to mankind,—the right understanding of the great laws of life in health and disease, which alone enables the physician to apply his experience with success in restoring to us that which is more valuable than all the comfort that riches or luxury can contribute.

MM. Edwards and Dumas' paper on the production of wax is in striking accordance with these views.

A theory has been promulgated by the justly celebrated Professor of Chemistry at Giessen, Dr. Liebig, that the constituents of the food of animals, when taken into the system, during the processes of digestion and nutrition, undergo a peculiar modification, the result of which is the production of substances, through the agency of special organs, totally different in the proportions of their chemical constituents from those of the materials from which they have been derived. A proof of this change was pointed out by Liebig as afforded in the production of wax by the honey-bee, as in the experiments of Huber, recently confirmed by Gundlach, in which the bees were fed only on sugar. But it was objected by many distinguished chemists that there was no direct *proof* in these experiments;

as the constituents of wax might have been collected by the bees before they were confined for experiment, and stored up in their own bodies, or that the wax might be derived from the fat of their bodies, which, in the proportions of its ultimate constituents, is very similar to wax. To put these objections to the test, MM. Milne Edwards and Dumas jointly undertook to repeat the experiments. They first ascertained by analysis the quantity of fatty matter in the bodies of a given number of bees, and the quantity of waxy matter accidentally contained in the honey with which they were fed, during confinement. The result of the experiments proved that the quantity of wax produced in a given period by each bee exceeded very nearly three times the combined amount of waxy matter contained in the food, and of fat in the body of each bee at the commencement of the experiment, besides a large amount of fat still contained in its body at the close. These experiments most incontrovertibly prove that the constituents of the wax could not have pre-existed in the bodies of the bees; but that wax is a true formation, the result of changes which the constituents of the food undergo, through the agency of special organs, during the process of nutrition.

So again experiments on the functions of insects, when combined with anatomical examination of their particular structures, and compared with the vital phænomena and structure of analogous parts in our own bodies, and the higher animals in general, lead us to equally important results.

MISCELLANEOUS.

NOTE UPON THE HABITS OF THE COMMON TOAD.

THAT the food of the Toad consists of insects as well as worms, is a fact with which every naturalist is familiar, though all are perhaps not aware of the extent to which in certain instances it preys upon the larger Coleoptera, chiefly of the Carabideous kind. I once found during the summer, concealed beneath a very large stone, one of these reptiles, the stomach of which was filled with the detached heads, thoraces, abdominal segments, elytra, &c. of *Steropus madidus*, *Oma-seus melanarius*, *Calathus*. These hard parts, more or less broken, and with the flesh dissolved out and digested, had undergone no further change, so that the species they belonged to could be perfectly well determined. I have since met with toads, in chalky districts where these beetles abound, which were literally *crammed* with them, and among others have found in the egesta the remains of *Carabus violaceus*, and of some also of the large Curculionidæ, such as *Otiorhynchus niger*. I have myself forced an ordinary-sized toad to swallow alive successively two of the first-named insect, which it effected without much difficulty, and have known it in confinement to devour two *C. moniles* inclosed along with it. These observations tend to throw some light upon the explanation of toads being found in holes of rocks and hollows of trees, whither they had probably resorted in search of the abundant store of insect-food which these situations afford, and where they might remain until the cavity became closed